CLAIMS

5   1.   A method for transmitting a WDM signal:

modulating a first optical signal on a first wavelength with a first data signal

having a first data rate to generate a first modulated optical signal having a first

bandwidth;

modulating a second optical signal on a second wavelength with a second data

10   signal having a second data rate to generate a second modulated optical signal having a

second bandwidth, said second bandwidth being greater than said first bandwidth and

said WDM signal comprising said first modulated optical signal and said second

modulated optical signal; and

applying error correction coding to said second data signal so that said second

15   data signal experiences a greater coding gain than said first data signal.

2.   The method of claim 1 wherein said error correction coding comprises

Reed-Solomon coding.

20   3.   The method of claim 2 wherein said Reed-Solomon coding comprises

coding in accordance with the G.975 standard.

4.   The method of claim 2 wherein said Reed-Solomon coding comprises

coding in accordance with the G.709 standard.

5.   The method of claim 1 wherein said first data signal comprises an OC-48

signal and said second data signal comprises an OC-192 signal.

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6.   The method of claim 1 further comprising:

multiplexing said first modulated optical signal and said second modulated optical

signal together to form said WDM signal.

10   7.   The method of claim 1 wherein said first modulated optical signal and said

second modulated optical signal have substantially similar power levels when

multiplexed together.

8.   The method of claim 1 wherein no error correction coding is applied to

15   said first data signal.

9.   A method of receiving a WDM signal, said method comprising:

demodulating a first modulated optical signal derived from said WDM signal to

form a first recovered data signal, said first modulated optical signal having a first

20   bandwidth;

demodulating a second modulated optical signal derived from said WDM signal

to form a second recovered data signal, said second modulated optical signal having a

second bandwidth greater than said first bandwidth; and

decoding said second recovered data signal in accordance with an error correction

coding scheme wherein said error correction coding scheme of said second recovered

data signal compensates for a lower signal to noise ratio of said second modulated optical

5   signal relative to said first modulated optical signal.

10.   The method of claim 9 wherein said error correction coding scheme

comprises a Reed-Solomon encoding scheme.

10   11.   The method of claim 10 wherein said Reed-Solomon coding scheme

comprises a G.975 encoding scheme.

12.   The method of claim 10 wherein said Reed-Solomon coding scheme

comprises a G.709 coding scheme.

15   13.   The method of claim 9 wherein said first recovered data signal comprises

an OC-48 signal and said second recovered data signal comprises an OC-192 signal.

14.   The method of claim 9 wherein said first modulated optical signal and said

20   second modulated optical signal are received with substantially similar power levels.

15.   The method of claim 9 wherein said first recovered data signal is not

encoded for error correction.

16.   A WDM transmission system comprising:

a first transmitter generating a first modulated optical signal that has been modulated with a first data signal;

5   a second transmitter generating a second modulated optical signal that has been modulated with a second data signal; and

an error correction coding block that applies an error correcting code to said second data signal prior to modulation so that a coding gain of said second modulated optical signal is greater than any coding gain of said first modulated optical signal.

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17.   The WDM transmission system of claim 16 wherein said first data signal experiences no error correction coding.

18.   The WDM transmission system of claim 16 wherein said error correcting

15   code comprises a Reed-Solomon code.

19.   The WDM transmission system of claim 16 wherein said error correction coding block operates in accordance with standard G.975.

20   20.   The WDM transmission system of claim 16 wherein a bandwidth of said second modulated optical signal is greater than a bandwidth of said first modulated optical signal.

21.   The WDM transmission system of claim 16 further comprising:

a first amplifier that amplifies said first modulated optical signal; and

a second amplifier that amplifies said second modulated optical signal, wherein

5   amplified power levels of said first modulated optical signal and said second modulated

optical signals are substantially similar.

22.   The WDM transmission system of claim 21 further comprising:

a multiplexer that combines said first modulated optical signal and said second

10   modulated optical signal to form a WDM signal.

23.   The WDM transmission system of claim 21 wherein said first data signal

comprises an OC-48 signal and said second data signal comprises an OC-192 signal.

15   24.   A WDM receiver system comprising:

a first optical receiver that recovers a first recovered data signal from a first

modulated optical signal on a first wavelength;

a second optical receiver that recovers a second recovered data signal from a

second modulated optical signal on a second wavelength; and

20   an error correction decoding block that decodes said second recovered data signal

in accordance with an error correcting code imposed on data of said second recovered

data signal, said error correcting code compensating for a lower signal to noise ratio of

said second modulated optical signal.

25.   The WDM receiver system of claim 24 wherein said first recovered data signal comprises an OC-48 signal and said second recovered data signal comprises an OC-192 signal.

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26.   The WDM receiver system of claim 24 wherein said first recovered data signal has no error correcting code imposed on it.

10   27.   The WDM receiver system of claim 24 wherein said second modulated optical signal has a greater bandwidth than said first modulated optical signal.

28.   The WDM receiver system of claim 24 wherein said error correcting code comprises a Reed-Solomon code.

15   29.   The WDM receiver system of claim 24 wherein said error correcting code is in accordance with standard G.975.

30.   The WDM receiver system of claim 25 wherein said error correcting code is in accordance with standard G.709.

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31.   The WDM receiver system of claim 24 wherein said first modulated optical signal and said second modulated optical signals are received with substantially similar power levels.

32.   Apparatus for transmitting a WDM signal:

means for modulating a first optical signal on a first wavelength with a first data

signal having a first data rate to generate a first modulated optical signal having a first

5   bandwidth;

means for modulating a second optical signal on a second wavelength with a

second data signal having a second data rate to generate a second modulated optical

signal having a second bandwidth, said second bandwidth being greater than said first

bandwidth and said WDM signal comprising said first modulated optical signal and said

10   second modulated optical signal; and

means for applying error correction coding to said second data signal so that said

second data signal experiences a greater coding gain than said first data signal.

33.   Apparatus for receiving a WDM signal, said method comprising:

15   means for demodulating a first modulated optical signal derived from said WDM

signal to form a first recovered data signal, said first modulated optical signal having a

first bandwidth;

means for demodulating a second modulated optical signal derived from said

WDM signal to form a second recovered data signal, said second modulated optical

20   signal having a second bandwidth greater than said first bandwidth; and

means for decoding said second recovered data signal in accordance with an error

correction coding scheme wherein said error correction coding scheme of said second

recovered data signal compensates for a lower signal to noise ratio of said second

modulated optical signal relative to said first modulated optical signal.